

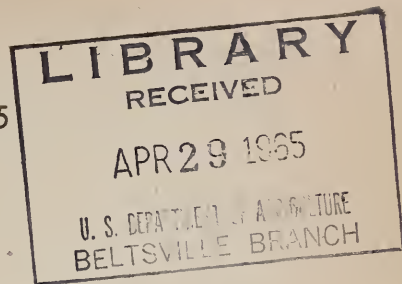
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agricultural marketing

APRIL 1965



U.S. DEPARTMENT OF AGRICULTURE/CONSUMER AND MARKETING SERVICE



The name of the Agricultural Marketing Service was changed, effective Feb. 8, to the Consumer and Marketing Service.

ORVILLE L. FREEMAN
Secretary of Agriculture

S. R. SMITH, Administrator
Consumer and Marketing Service

Volume 10, Number 4

Contents

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Cover Page

These youngsters are part of the one-third across the Nation who are getting nutritious lunches under the National School Lunch Program. What about the two-thirds who don't? See p. 4, "The Hungry Child Problem."

Editor, JAMES A. HORTON

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The Consumer and Marketing Service

What It Is — and Why It Is

By S. R. Smith, Administrator, C&MS



THE CONSUMER and Marketing Service is a new agency of the U.S. Department of Agriculture, designed for a new age of service to consumers, producers, and those engaged in the marketing of food and other products of the farm.

When Secretary of Agriculture Orville L. Freeman announced the formation of C&MS on February 8, 1965, he pointed out that it brings together in one agency most of the Department's action programs of service to consumers and those which facilitate and regulate the marketing of food and fiber.

The new agency gives added emphasis to consumer food programs. These include school lunch and special milk programs, direct distribution of foods to the needy, and cooperation with the food trades in expanding consumption of foods in particularly abundant supply. And they include the rapidly growing Food Stamp Program which adds to the food purchasing power of low income families and in this manner makes a significant contribution to our national war on poverty.

The new agency also gives major status to the Department's consumer protection programs — such important activities as the inspection for whole-

someness of most of the Nation's supply of meat and poultry. These services are one of the principal reasons that American consumers are said to be "the best protected, the most fortunate in the world."

Benefits of these "consumer programs" of course are not limited to consumers. They also serve to widen markets for food and, in the case of inspection, facilitate trade, so that farmers and those engaged in marketing benefit directly, too.

In the same way, producers, marketers, and consumers benefit directly from the marketing services and market regulation programs of the Consumer and Marketing Service — programs such as grading, market news, marketing orders, and the enforcement of fair trading laws.

These services, which help to make the marketing of the Nation's supply of food and fiber efficient, orderly, and dependable, have not diminished in importance!

They become more vital than ever as marketing becomes more complex, extensive — and more expensive. In fact, the cost of marketing — all the buying and selling, assembling, storing, transporting, processing, packaging, and merchandising that goes on between farm gate and retail counter — the

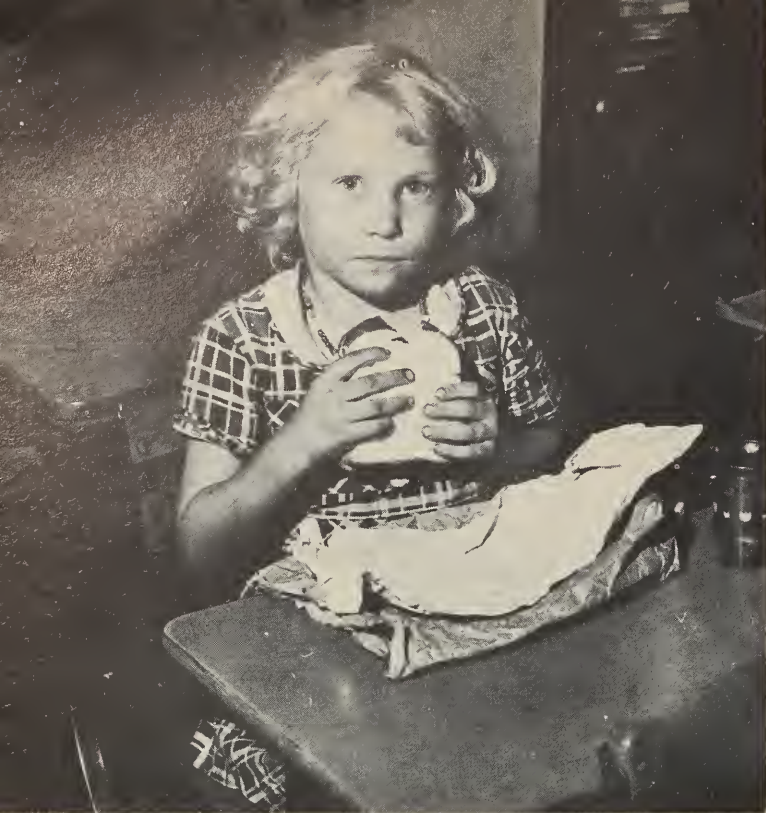
cost of this marketing process to an ever-increasing degree determines the price we all pay for our food and other products of farm origin.

And that is why an efficient, fair, and economical marketing system is so important to every person in this country — and why the Consumer and Marketing Service is dedicated to help attain just that for the Nation.

This agency, then, has one central purpose: To service the marketing system, regulate, improve, and protect it — to help give force to the principle that our supply of food and fiber shall move from producer to consumer, quickly, efficiently, safely, and with fairness to all — including those who, without the help of Government, would be unable to buy an adequate diet.

Services to consumer? Yes. Services to marketing? Yes, that too. But actually, the interests of consumers, producers, and marketers are so interdependent in the kind of economy that we now have in this country that, in most cases, services directed to any one sector are bound to be beneficial to all others.

And in all of the work that it does, the Consumer and Marketing Service truly serves the interest of all — that interest we properly call the public interest.



In March 1962 11 million pupils at 39,000 schools had no lunch service.



Many such pupils bring lunch from home, some buy snacks, some go without.

The Hungry Child Problem

A USDA
School Lunch Analysis

By Bonnie S. Whyte

ANUTRITIOUS and low-cost complete lunch has become part of everyday life for many millions of school children taking part in the National School Lunch Program administered by the Consumer and Marketing Service of the U.S. Department of Agriculture. On an average day, about 17 million plate lunches are served. The program reaches more than a third of the Nation's school children.

But what about the remaining school children who are missing out on one of the best nutritional bargains in the country? A study made by USDA's Economic Research Service shows these youngsters fall into two groups: those who attend schools without any lunch services and those who do not regularly take advantage of the National School Lunch Program where it is available.

In March 1962 about 6.3 million pupils (1 out of 6) in public schools did not have access to any lunch service at school. In private schools, 3.0 million (1 out of 2) pupils, could not obtain a school lunch.

On an average day, approximately

one-half of the pupils enrolled in NSLP schools were eating a plate lunch. The other half was bringing lunches, eating at home or elsewhere, or buying a la carte foods.

The USDA study was based on sample surveys of about 5,700 public and private schools in March 1962. The purpose was to determine the number and kinds of lunch services available in American schools and the extent to which students made use of these services. This is part of the broader NSLP objective to expand markets for farm products and provide better nutrition for the Nation's school children.

The study showed that about 66,850 of the Nation's 112,000 public and private schools took part in the program in March 1962. Another 5,850 schools offered lunch service to their students, but not as part of the program. The remaining schools — about 30,400 public and 6,800 private — had no lunch service at all.

Potential for expansion of the NSLP into schools lacking lunch services is greatest in the Northeastern and Midwestern regions, where 25 and 20 percent respectively of the public school students have no lunch services. Ap-

proximately 95 percent of public school pupils in the Southeast, 92 percent in the Southwest, and 88 percent in the West already have access to lunch services. Potential for expansion is also greatest in the more populous counties and cities — including the major metropolitan areas.

Schools taking part in the NSLP get donations of food and cash from USDA. In turn, they serve nutritious lunches on a nonprofit basis and provide these meals at little or no cost to needy children. Schools in the program are able to serve complete Type A plate lunches at an average price to the child of 25 to 30 cents, or well under actual lunch costs. The Federal Government's contribution averages about 11 cents per lunch.

Every Type A plate lunch served under the National School Lunch Program includes a protein food, fruits and vegetables, bread, butter and milk — in proper amounts to supply each child with 1/3 to 1/2 his daily food needs. Menus are planned by local school lunch managers to insure variety and to satisfy regional food tastes.

Yet in 1962 the Type A plate lunch was eaten on an average day by only

about one-half (48 percent) of the pupils enrolled in public schools offering them. In elementary schools, the percentage was higher than the average, about 51 percent. In junior and senior high schools, average participation was lower — about 37 percent.

This was an improvement over five years earlier, when a similar study showed that 32 percent of the students in junior and senior high schools and 49 percent of the elementary students took advantage of the school lunch bargain available to them.

There is considerable variation in the percentage of children buying the Type A plate lunch among different regions of the country. In 1962 average daily participation in the Southeast was 58 percent, and in the Southwest, 57 percent, the regions where greatest progress in school food service has been made. In contrast, average daily participation in the Northeastern and Western regions was low — about 40 and 38 percent respectively.

A major concern of Federal and State school lunch officials is that nutritious school lunches be made available to all who need them, particularly children in low-economic areas where lunch at school may be the only good meal of the day. All schools taking part in the National School Lunch Program must assume the costs of serving free or reduced-price lunches to needy children.

The 1962 study shows that almost all of the free or reduced-price lunches served to needy students were in schools participating in the program. Current operating reports from NSLP schools show about 10% of the lunches are served free or at reduced price.

Are there still more children in these schools who don't buy the plate lunch because they can't afford it? Many local school officials believe so and are now re-examining their records and policies.

The USDA study at least partially confirms their belief. In 1962 there were an additional 508,000 children in NSLP schools who were classed as near-needy by school officials and might have received free or reduced-price lunches had there been slightly broader local definitions of what constitutes need.

A big problem facing school lunch experts today is the millions of children who attend schools with no lunch service at all; this group, officials believe, includes the largest percentage of poverty-stricken youth. The 1962 study bears this out.

Among public schools across the country, the proportion of needy children was several times greater in the schools that had no lunch service than in those that did, 11 percent compared to about 3 percent on a national average. Substantial numbers of needy pupils were found in all regions, and in both urban and rural areas. In all,

there were some 688,000 public school students who came from impoverished homes and attended schools with no lunchrooms.

A similar situation existed in the 8,800 private schools with no lunch services, where 7 percent of the students were needy — as compared with over 4 percent needy in the private schools which did operate lunch services. In 1962 about 200,000 needy children attended private schools where no lunch services were available.

Through cooperative efforts by Federal, State and local officials — using special assistance in food and cash from USDA — additional small schools in low-income areas have been able to begin serving complete lunches every day to their students. This year these programs are under way in 1,100 schools including 130,800 students in all parts of the country.

Volunteer help, donated equipment, and teacher determination are just a few of the essentials needed to make a low-budget school lunch program click. Once students begin getting good lunches, teachers report improvements in their appearance, classroom alertness, and school attendance. Results like this spur continued efforts to extend the school lunch program.

(The author is a member of the Information Division, Consumer and Marketing Service, USDA.)

About 66,850 of the Nation's 112,000 public and private schools participated in the NSLP in March 1962. Another 5,850 schools offered lunch but not under the NSLP. The remaining schools had no service. Volunteers help at this rural school.



An Automated Potato Inspector . . .

By Werner C. Hietsch

A SUBSTANTIAL amount of man-hours and money has been saved by a Maine potato processor during the last two harvests, thanks to an ingenious machine which substantially speeds up the work of the Federal-State Inspection Service in potato-famous Aroostook County.

The device is the brain-child of Myron U. Van Kirk, the U.S. Department of Agriculture's supervisor for the Fruit and Vegetable Inspection Service in Maine, and Philip W. Soucia, potato buyer for Potato Service, Inc. in Presque Isle. They developed it virtually out of necessity in the summer of 1963, when it became obvious that the firm was going to take in twice as many potatoes as during the previous season. Potato Service wanted Federal-State inspection of all its incoming shipments — to make sure they met contract specifications and as a basis of pricing to growers.

Faced with a mountain of potatoes that loomed as an insurmountable task for the Inspection Service's limited manpower, Van Kirk and Soucia pooled their resourcefulness. Inspectors in Idaho had been using similar machines as inspection aids for several years. In Idaho, though, the potatoes are the long type and sizing for inspection is done by hand. Since most Maine potatoes are the round type, the two men came up with a plan to combine the Idaho equipment with an automatic sizing device and the result was a

machine that they hoped would speed up inspection.

They were right. It did reduce inspection time — dramatically. The 23-foot-long, 18-inch-wide machine enables inspectors to wash, weigh, size, grade and issue an official Federal-State inspection certificate in little over three minutes per barrel sample (165 lbs). Done by hand, the process usually takes from 15 to 20 minutes.

Peak operating efficiency is obtained with a crew of eleven—four inspectors, six Potato Service, Inc. men, and an inspection supervisor. One to three barrels per incoming load are sampled. Each barrel weighs about 165 pounds. This is in contrast to the 50 pounds normally inspected by hand.

Here's a step-by-step account of how the machine works:

The device first weighs the barrel sample (gross weight) which is duly recorded by inspection personnel. The next step is a water bath at the head of the machine to soften caked dirt. From there the potatoes are elevated to a drum washer containing a water spray to eliminate any dirt loose or caked. Sticks or rocks are removed on the grading table. They then move to the first of three spool sizers. Here spuds under 2 inches and not of contract size are removed. Those remaining are sent along a short conveyer belt which also serves as an inspection and grading area. Two inspectors, one on each side of the machine, are stationed here, to eliminate culls and other defective potatoes.

Having passed this inspection, the

remaining potatoes reach a second sizer, which eliminates spuds under 2¼ inches. The last sizer catches potatoes in the 2¼- to 3-inch range. Those that are larger than 3 inches are caught at the end of the machine and inspected for hollow heart or other internal defects. As the potatoes are being sorted by sizes, they drop into containers on automatic direct reading scales. The different weights are totaled (net weight), the sum of which is subtracted from the gross weight of the sample. The difference represents foreign matter, such as rocks and soil. An inspection certificate is then prepared, based on these weights. This tells the grower the percentage of potatoes grading U.S. No. 1 and U.S. No. 2, the number of culls, foreign matter, percent under 2 inches, 2 to 2¼, 2¼ to 3 inches, and over 3 inches in diameter.

It is difficult to estimate the total hours and money that have been saved by this machine. However, it does reduce the time for inspecting a load of potatoes by about 80 percent.

"Without this machine, we might have very well worked around the clock without a day off and still not have gotten all the potatoes inspected," Van Kirk declares. "From the middle of September to the latter part of October 1964, we averaged about 150 loads (15,000 to 20,000 barrels) a day for Potato Service alone. That meant working two 8-hour shifts 5 days a week."

Soucia is in complete agreement on the merits of the machine. "I don't know how we'd do without it," he stated. "I can't really estimate the exact



Almost

savings it has meant for us. But it certainly has been well worth the investment and then some. We're more than satisfied with it, and so are the growers. They get a fairer and more accurate test because of the larger size of the samples.

"This year we had 400,000 to 600,000 barrels under harvest contract for delivery before the end of October, so that we'd have enough under storage to maintain our capacity of 10,000 barrels of fresh potatoes a day. We prefer to have our bins filled before cold weather and snow set in. Many of the growers who sell directly to us at the current street prices are unable to make deliveries once it gets extremely cold. Such severe weather conditions usually last for a week or two and could seriously hamper our operations if we didn't have a backlog in storage. Since we've been expanding our output each year, there's little doubt that we'll be having good use for this machine during upcoming harvests. It's really bailed us out of a tough situation."

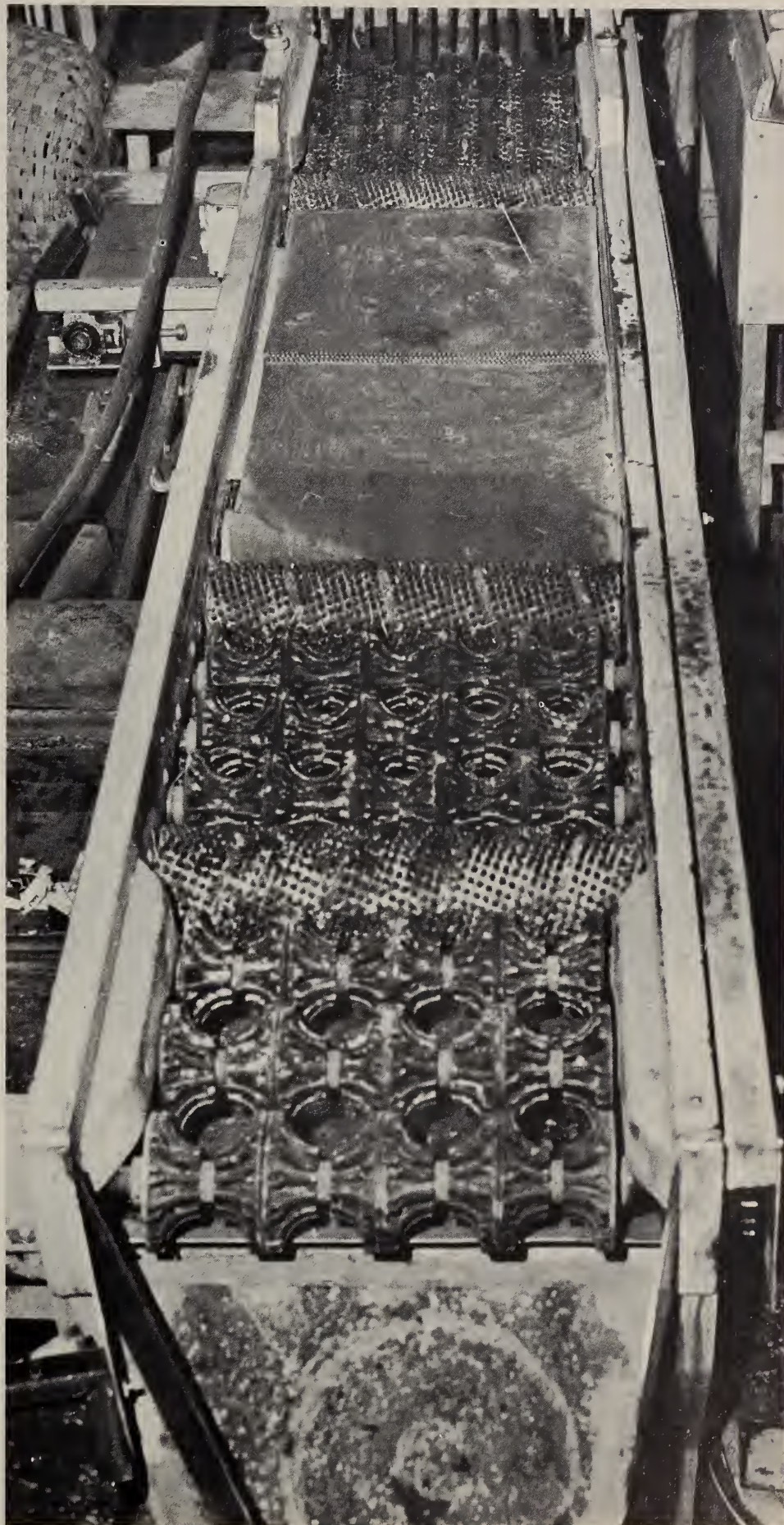
There's an interesting footnote to this story. The machine, which almost single-handedly saved the day for Potato Service, Inc. and the hard-pressed Federal-State inspectors, still doesn't have a name.

(The author is a member of the Northeast Area Office, Information Division, C&MS, in New York City.)

The use of commercial names does not constitute an endorsement by the U.S. Department of Agriculture.

This 23-foot-long, 18-inch-wide machine enables inspectors to wash, weigh, size, grade and issue an official Federal-State inspection certificate in little over three minutes per 165-pound barrel sample. The process usually takes 15 to 20 minutes by hand.

At right, from top to bottom, are the 2-inch spool sizer, the inspection area, the 2½-inch sizer and the 3-inch sorter. Larger potatoes fall into a barrel at the end of the machine, which reduces inspection time by 80 percent.



Fast Pro For Smo

A developmen
as one of the o
marketing fea

By D. R. Hamm

Inside the experimental chilling chamber, air blows through screened openings at rear, at temperatures as low as -80° F. An 18-pound ham is brought from 155° F. to 50° in just 75 minutes—instead of 24 hours—smaller cuts in less time.

SMOKED, precooked hams . . . ready to warm and serve within 15 hours after the hog is slaughtered? Yes, it can be done with an experimental fast-processing method that may rank as one of the outstanding meat marketing developments of the decade.

Marketing researchers in the Agricultural Research Service of the U.S. Department of Agriculture and meat scientists at the Oklahoma Agricultural Experiment Station are testing fast processing. Only preliminary tests with hams, which require the longest processing time, are described in this article.

Another article in a later issue will give results of tests with other smoked and fresh pork products. Temperatures, time intervals, and equipment used in the tests are still being studied and are not quoted as recommendations for commercial use.

Scientists cut hog carcasses immediately after slaughter instead of chilling the meat 24 hours before it's cut. After processing, cuts are rapidly chilled in a compartment constructed to cool the meat with air at temperatures as low as -80° F.

Such rapid processing could reduce pork processing costs by several million dollars a year, if applied industry-wide. Reduction in refrigerated storage space, which costs packers about \$25 a square foot, would probably produce the greatest savings. And packers would not have to maintain large, expensive meat inventories, as the meat would be marketed in only a few hours after slaughter. Conventional processing re-

quires 2 days to 2 weeks.

Researchers used 20 hogs, each weighing about 200 pounds, in preliminary tests with 15-hour processing. Commercial methods were used for slaughtering, scalding, dehairing, singeing, eviscerating, and splitting carcasses. One side was processed conventionally and the other side processed with the experimental method.

In the experimental method, carcasses, at temperatures of about 100° F., were immediately divided into wholesale cuts. Although the meat rolled and slipped at first, making it difficult to cut, meatcutters soon learned how to hold the meat so that it cut as easily and as rapidly as cold meat. Holding devices are being developed that will further improve the efficiency

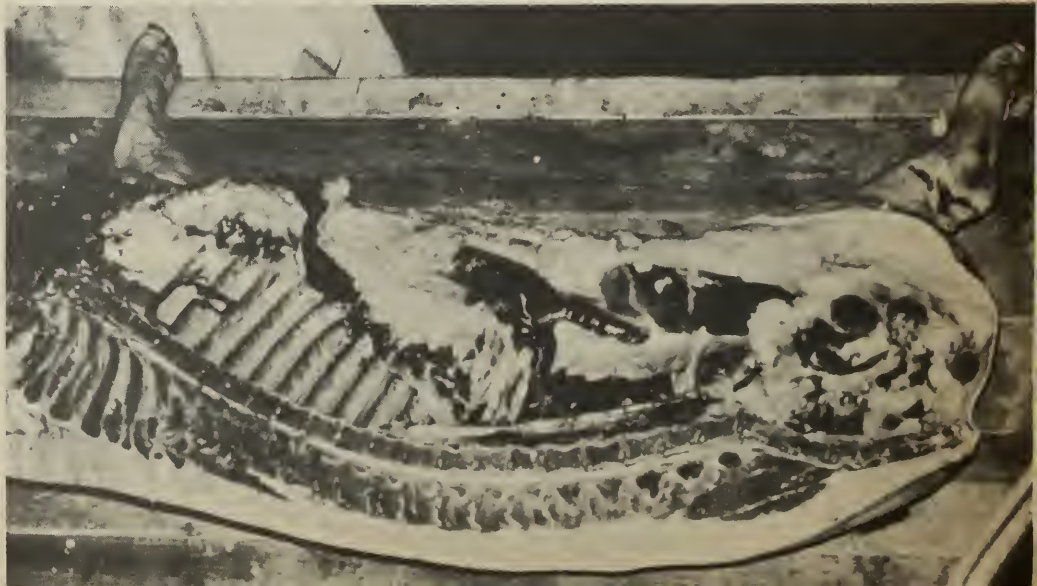
of cutting the warm meat.

Hams were pumped with a cold brine solution, defatted, boned, and inserted in fibrous casings. They were then held in metal molds for 8 hours in a smokehouse at a temperature of 130° F. Hams were fully cooked to an internal temperature of 155° F. for 2 hours.

Cooling then followed in a quick chilling chamber, the heart of the fast system. Smoked hams weighing about 8 pounds required about 75 minutes to chill from an internal temperature of 155° to approximately 50° F., in an air temperature of -80° F. After a 2- to 3-hour tempering period, under conventional refrigeration at 36°, the meat was ready for the market.

Preliminary studies indicate that the

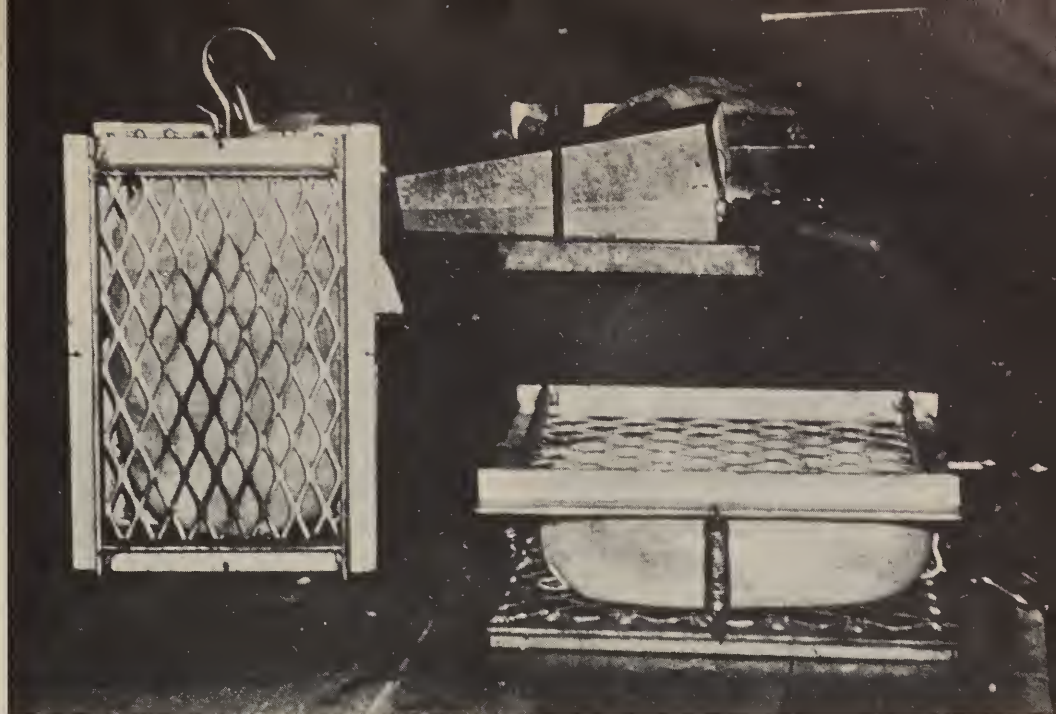
When the fast-processing method was used, the carcass, right after slaughter, was placed in the natural walking position of a hog. Hams were held in metal forms to be shaped into positions consumers are accustomed to buying.



Processing Smoked Ham

that may rank
standing meat-
s of the decade.

as and T. F. Webb



Hams from warm carcasses are slipped into fibrous casings and placed into position-shaping molds before they're smoked. Molds cost \$1 plus labor.

fast-processed hams are of the same high quality as conventionally processed hams. Results of moisture and shear press (tenderness) tests show that fast-processed hams are just as juicy and tender as hams from the same carcasses processed conventionally. And fast-processed hams have as much eye-appeal as those processed conventionally.

Additional studies will be made to determine microbial count and shelf life of fast-processed hams. The hams yielded slightly more meat than hams processed conventionally.

The most expensive part of the experimental system is the chill chamber. A commercial unit would probably be of a different size and would not have the expensive gadgetry of a laboratory

model; therefore no meaningful prices could be quoted.

Both laboratory and commercial packing plant conditions are planned for future tests. Another chilling chamber is being considered so that more precise data can be obtained on heat transfer and humidity relationships. The chamber now used has limited meat capacity and limited temperature and humidity ranges.

Carcasses were also cut immediately after slaughter in two additional tests, one requiring 95 hours and the other requiring 119 hours, with 40 hog carcasses. Both took longer and in neither case was meat superior to that processed in 15 hours. Meat processed by all three fast methods was not significantly different in tenderness and

juiciness than meat processed conventionally.

In the 95-hour method, hams were pumped with a salt solution and "pickled" for 3 days in a holding solution of brine. Hams were smoked 8 hours and were then cooked 2 hours. Hogs used in all tests were similar.

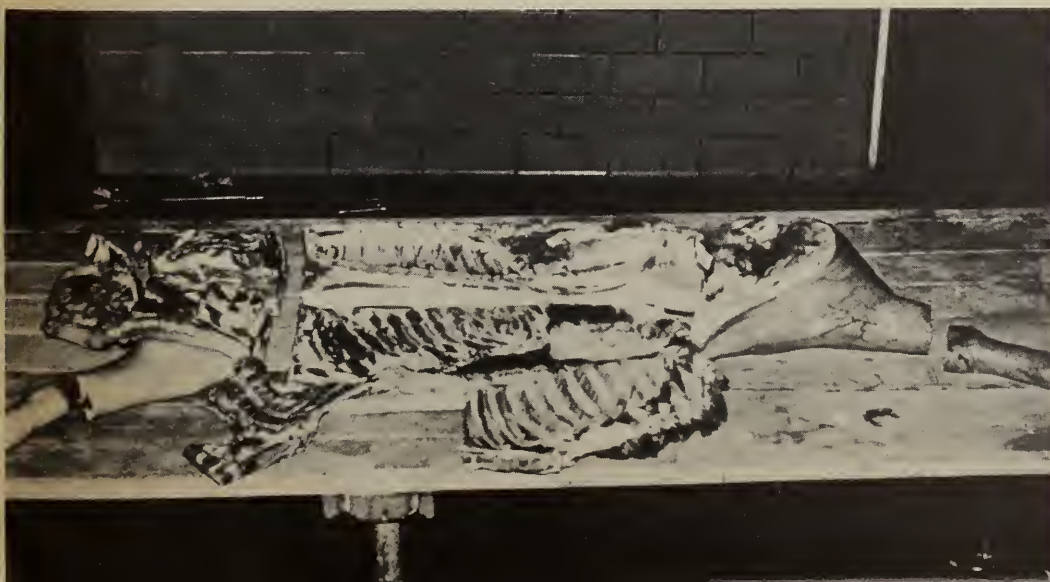
Hams used in the 119-hour processing method were chilled in the cooling chamber before brine and smokehouse treatments. A seven-man taste test panel reported that these hams were more tender, and juicier than conventionally processed hams.

Since less space and time are two of the most-needed improvements in processing pork, one might wonder why a fast processing system hasn't been used before. The answer is that, although the techniques described in this article aren't new, it was believed that they could not be successfully used with hot pork.

Because of the lack of firmness of the hot meat, it was thought that it could not be cut into acceptable wholesale or retail cuts. And the quality of the hot meat was expected to deteriorate too rapidly for use under commercial conditions. But the holding techniques for hot meat and rapid chilling successfully used in the ARS-Oklahoma experiments show that these obstacles can be overcome. Technical details on all tests will be published after tests have been completed.

(The authors are members of the Transportation and Facilities Research Division, ARS.)

The side of hog, showing method of cutting in fast-processing system. Meat is as easy to cut immediately after slaughter than when chilled before cutting.



What Makes A Beautiful Lawn?

BEAUTIFUL lawns, like delicious cakes, are not mere quirks of fate. Careful consideration of the ingredients, plus gentle, light-handed care go into both. Different recipes will satisfy different tastes, but in lawn construction there is one standard recipe: You take good, well-adapted lawn seed . . . add favorable growing conditions . . . throw in proper care . . . let stand, and in a few weeks you should have a healthy rug-of-green around your house.

Most grass seeds are not as temperamental as you might think — although there are a few prima donnas. However, very few grasses will perform adequately under just any conditions. To get the best results from your lawn-building program, you must take into consideration what kind of lawn you want, and what kind of lawn the growing conditions of your environment are capable of producing. Then you select the seed that comes closest to satisfying both.

A difficult decision? Possibly, but you have a friend. The label on the con-

tainer of seed can be a very valuable guide. All seeds that pass from one State to another come under the jurisdiction of the Federal Seed Act. This Act, administered by the Consumer and Marketing Service of the U.S. Department of Agriculture, requires that seeds in interstate Commerce be labeled to indicate what kind they are; how much of each kind is in the package; and what percentage is expected to produce healthy plants.

In addition to this information, many States, in order to assist the consumer in selecting seed, are also requiring that the label distinguish between the fine- and coarse-textured seeds. The growing characteristics of these two groups are important factors to remember when buying your lawn seed. Fine-textured seeds produce a narrow-bladed grass which forms a delicate, perennial lawn of lasting beauty.

The coarse kinds have a broader and tougher blade. They germinate faster and become established in the ground more quickly than the finer grasses. For

this reason they are used extensively for hard-wear areas such as playgrounds, or for those areas where just a temporary cover is desired.

Here are some of the grass seeds you will probably run across in determining which one to buy:

Fine-Textured Grasses

One of the basic fine-textured lawn grasses is the *common (or natural) kentucky bluegrass* and its other varieties, merion, park, newport, and arboretum. It forms a beautiful, closely-knit lawn when properly cared for — and that means proper fertilization and watering. For best results, this grass should not be mowed closer than two to three inches.

Rough bluegrass or poa trivialis is a good grass to sow in shady areas. Don't be misled by its name. The rough bluegrass is actually a fine-textured grass which answers many a home owner's problem of a grass to sow on the north side of the house, or under the big shade tree.



The coarse-textured tall fescue has a broad blade and a thick stalk, is good for hard-wear areas such as playgrounds.

Creeping red and chewings fescue provide good companion grasses for the bluegrasses because they germinate and become established faster. They offer a good cover protecting the bluegrasses from minor dangers such as rain and wind during their early formative period. These fine-bladed grasses, like the rough bluegrass, are well adapted to shady areas. Varieties of the creeping red fescue which you might want to look for are pennlawn, illahee, and rainer.

Other fine-textured grasses include *canada bluegrass*, *wood bluegrass*, *velvet bluegrass*, *colonial bentgrass*, *creeping bentgrass*, and *common bermuda grass*.

Coarse-Textured Grasses

The predominant characteristics of the coarse-textured grasses are best displayed in *tall fescue*. The main attribute of this grass is that it will grow under just about any conditions. It germinates and becomes established quickly and because it is a deep-rooted and persistent grass, it is used a good deal in stabilizing the soil against wind and water erosion. It has a tendency to form clumps; so for best results, it should be seeded rather heavily to keep the clumps close together. Good fertilization will also help assure a reasonably dense turf. It is an extremely

durable and hardy grass which requires very little care. Because of this it is commonly used in developing a good football turf. Varieties of the tall fescue include *kentucky 31*, *alta*, and *goar*.

Annual and *perennial ryegrass* are both coarse-textured grasses that quickly establish themselves in the soil. The annual variety forms a temporary cover of about one year, whereas the perennial may live for several years. Characteristic of the coarse grasses, the ryegrasses tend to clump when used in a mixture with other grasses. They are used extensively in the South as a winter cover and also as a nurse crop protecting other fine-textured grasses.

Redtop, though considered a coarse-textured grass, is not as coarse as the other grasses in this category. It forms a long-lasting cover that becomes established quickly and for this reason it has been used a good deal to protect the bluegrasses until they mature.

Other examples of coarse-textured grasses are *meadow fescue*, *timothy*, and *orchard grass*.

When you know which kind of seed you want to sow in your yard, the next logical step is to buy it. Here is where the Federal Seed Act plays its important role in developing your lawn—if you READ THE LABEL.

The label is broken down to indi-

cate the purity and germination of the seed in the container. It is a simple matter of matching the kind of lawn you want with the information on the label. When you have selected the appropriate package, carefully check the germination. It is given as a percentage, so visualize 100 seeds — the germination rate is the number of that 100 that is expected to produce a healthy plant. An 85 percent germination, then, means that 85 of the seeds are capable of developing into adequate grass plants.

This labeling information is the result of careful testing by trained seed technologists. A sample of each lot of seed is inspected and tested. Each individual seed of this sample is examined to ascertain this information. It's a tall order, and the beneficiary — you — if you read the label.

| A ONE-POUND MIXTURE OF: CONTAINS | |
|----------------------------------|---------------|
| 5% Kentucky bluegrass | 110,000 seeds |
| 20% Red fescue | 109,000 seeds |
| 40% Ryegrasses | 90,000 seeds |
| 30% Kentucky 31 | 68,000 seeds |

Do not be upset when buying a grass seed mixture if the percentage of fine-textured seeds is markedly less than the percentage of coarse seeds. The fine-textured grass seeds are smaller, therefore there are more of them to the pound than coarse seeds.



The fine-textured merion kentucky bluegrass has a narrow blade that forms a beautiful, tightly-knit lawn.

Packaging material effective against insect penetration is easily recognized after a few month's storage under conditions simulating those in an insect-infested warehouse. Commodity packaged in insect-resistant film (marked "3") is completely free of infestation. Food material in bags of non-resistant film is heavily infested.



Film Packages Foil Insects

Several million insects failed to pierce plastic package containing flour, even after an 18-month attempt.

FOOD, seeds, tobacco, animal feed, and other products packaged in plastic polycarbonate film may be safer than ever before from insects that damage several million dollars worth of such products annually.

Polycarbonate film packages recently tested by the U.S. Department of Agriculture gave more promising results than several hundred other films that entomologists Henry A. Highland and Edward G. Jay tested for insect resistance. Flour packaged in polycarbonate film withstood — undamaged — an 18-month siege of several million insects in a room at the Stored-Product Insects Laboratory of USDA's Agricultural Research Service, Savannah, Ga.

Other materials used for packaging flour were riddled with hundreds of holes, in the same tests. ARS entomologists counted nearly 300 holes in kraft paper bags, and nearly 400 holes in cellulose acetate packages. This amounts to about one hole per square inch of bag surface.

Insects began to penetrate the acetate and paper packages in only 3 months' storage time. Each package tested contained about a pound of flour.

More, or fewer, insects may have entered the infested packages than are indicated by the number of holes. Some insects may have chewed a new hole each time they entered or left a package. On the other hand, some insects may have used holes made by other insects.

Entomologists exposed test packages to insects that commonly feed on stored products, and for which most flexible packaging materials offer little resistance. Included were caddisflies, cigarette beetles, lesser grain borers, and rice weevils.

Tests also showed that the polycarbonate-film packages should be effective in preventing the possible outbreak of infestations by insects that are accidentally sealed inside packages. The

scientists wrapped two cigarettes in each of 50 polycarbonate packets and, in some instances, placed cigarette beetles inside the packages. Adult cigarette beetles, which infest food as well as tobacco, failed to chew any holes to escape from the packages in the 5-week tests.

Only one of several cigarette beetles in a dish in which the packets had been placed entered the package after 2 weeks' exposure to the bags. No additional beetles entered the packets in the remainder of the 5-week tests.

Cigarette beetle larvae were little more successful than the adults in penetrating polycarbonate packages in similar experiments. Only 8 out of 50 packages were penetrated by the larvae. Larvae penetrated all 50 cellophane packages used in the same tests. Adult beetles penetrated 31 cellophane packages, which indicates a low insect resistance for this packaging material.

Entomologists have not determined why the insects leave polycarbonate film alone. No insecticide was applied to the packages. Polycarbonate film may therefore rank as an important contribution in the development of non-chemical methods to control insects.

Film packages were heat-sealed to cut off the possibility of insects entering the packages through normal openings. Kraft paper bags had insect-tight glued seams.

Cellophane and polycarbonate films used in the laboratory tests were 1-mil-thick, about two-thirds the thickness of this page. Entomologists used 2.7 mil polycarbonate and 1.3 mil cellulose acetate film in the storage tests. Results of additional tests will be published when they have been completed.

Polycarbonate film is stronger, stretchier, and more resistant to bending and folding than cellulose acetate film, according to the ARS tests, and can be manufactured in either transparent or opaque form.

Dr. Henry A. Highland, entomologist at the ARS Stored-Product Insects Lab., Savannah, Ga., points out insect penetrations in a package made of experimental material. These packages were stored only a few months.



Dr. Highland and Edward G. Jay, also an entomologist at the ARS Stored-Product Insects Laboratory, Savannah, Ga., record insect penetrations of packages made of various experimental films.

Reporting the Grain Market in Illinois

Illinois State grain market reporter Lynn Kessinger determines prices offered for crops from price board and relays them to Springfield office to be prepared for Statewide distribution.

By Earl W. Manthey



FARMERS within the listening area of six Illinois radio stations may know with a turn of a dial what local grain elevators are paying for wheat, corn, soybeans, and oats.

The Springfield Federal-State Grain Market News office, established in June 1963, now supplies farmers with timely, accurate and current prices being paid for grain grown in their area. This enables them to determine the best time to sell.

More than 70 country elevators throughout the State are called daily to obtain their prices, market trend, supply and demand information, and other data which farmers need to know in their operations. This information is then compiled into news form and sent to radio and television stations, newspapers, and news wire services for quick dissemination to Illinois farmers.

A Grain Market Reporter also makes special radio tapes containing the information collected from country elevators. These tapes are broadcast the following morning over six radio stations located in different sections of the State. This enables farmers who missed the evening report to simply tune in the next morning to find out how the market stands.

As an additional service, the Springfield office distributes each Friday a printed report — "Grain Market News" — which contains a more detailed review of Illinois country and terminal market trade and highlights of a nationwide market summary.

Prior to inauguration of the Federal-State Market News Service, the only price information available to farmers came from the large terminal markets, mainly Chicago. To determine prices being paid at local country elevators, farmers had to deduct transportation and handling costs from the Chicago prices. At one time this system adequately served the farmers' needs.

Duke Manthey, Federal grain market reporter-supervisor, broadcasts grain prices daily over six radio stations located in various parts of Illinois. Farmers thus know what price to expect before going to the elevators.

But with changing transportation systems and modernized storage facilities, grain began to be transported to markets other than the large terminal markets — or stored on farms. It became impossible for the farmer to accurately compute selling prices from the terminal market price alone. Another disadvantage was that the Chicago reports concentrated on futures transactions. They were not an accurate indication of the actual value of the grain in producing areas on any particular day. The U.S. Department of Agriculture's Consumer and Marketing Service was called on for assistance and the Springfield Federal-State Grain Market News Office was born.

Organized as a cooperative function of State and Federal departments of agriculture, the Illinois grain market news service is financed on a 50-50 matching fund basis under terms of a mutual agreement. The Springfield office is staffed with both Federal and State personnel. Activities carried out there are designed to keep farmers, processors, and brokers well informed of the market prices of grain throughout the State. The accent is on speed—a feature that is essential to today's farmer.

Reports from users of the service indicate that the information is a very important reference in making marketing decisions. Thus far, the fundamental use of the market data has been as a buying and selling guide for farmers. By watching prices over a period of time, farmers can judge market trends and accurately determine what they will receive for their grain when they are ready to sell. By keeping farmers better informed of the market situation, market news programs enable them to get the most out of their crops.

(The author is a Federal grain market reporter-supervisor stationed in Springfield, Illinois.)



OFFICIAL BUSINESS

New Color Standards for French Fries

By Elinore T. Greeley

BUFF . . . golden . . . light brown . . . Buyers' preferences vary when it comes to the color for frozen French fried potatoes.

But manufacturers of French fries can now make use of a new, easy-to-use standard to guide them in precooking their product to the desired color. Developed by specialists of the U.S. Department of Agriculture's Consumer and Marketing Service with the assistance of leading industrial color experts, the standards are particularly useful for quality control, standardization, and determining specifications in buying and selling. They are also being used in the official voluntary inspection service furnished by the Fruit and Vegetable Division of C&MS to potato processors.

The new color standards show three sets of strips, which simulate style (crinkle cut and regular) and length variations. Each scale consists of varying shades of "fry" colors, identified by the numbers 1, 2, 3, 4, and 5. A special paper is used, with a coating that is resistant to moisture and grease.

While approved artificial daylight sources should be used for critical color evaluation, colorants used in the standards permit color comparisons to be made under a variety of light sources with high accuracy. Because of this feature, the standards should prove useful in plants, laboratories, and for sales materials.

With the new color standards, it's not necessary to use words in classifying color. The degree of color attained by the frying process can be classified — also specified by the buyer — by a numerical reference. A buyer might

ask for "USDA No. 2 fry color," for instance, or possibly "A color darker than USDA No. 2, but not as dark as No. 3."

The new color standards take the place of hand-painted color models which have been in use for several years. Although the models were satisfactory for classifying and specifying "fry" color, they were expensive to produce and difficult and costly to replace if damaged or lost.

The new standards are much less expensive and less complicated to produce than were the models.

They represent a significant milestone in the efforts of C&MS standardization specialists to provide a means

of uniformly classifying the color of products. C&MS specialists believe this new and practical type of color standard may open the way toward development of similar standards for other products where shadings of color are important.

Information on how to obtain and use the new color standards may be obtained from the Fruit and Vegetable Division, Consumer and Marketing Service, U.S. Department of Agriculture, Washington, D.C. 20250.

(The author is Head of the Standardization Section of the Processed Products Standardization and Inspection Branch, Fruit and Vegetable Division, C&MS.)



The new and simpler color standards show three sets of strips, simulating style (crinkle cut and regular) and length variations. Each scale consists of varying shades of "fry" colors, identified by the numbers 1, 2, 3, 4, and 5.